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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,531	07/26/2006	Martin Heyder	3773	8914

7590 05/16/2008

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EXAMINER	
DESAI, NAISHADH N	
ART UNIT	PAPER NUMBER
2834	
MAIL DATE	DELIVERY MODE
05/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,531	HEYDER, MARTIN	
	Examiner	Art Unit	
	NAISHADH N. DESAI	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/30/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Applicant's clarification of examiner's objection for the term "pole pot" is accepted by examiner. Objection made in previous office action is withdrawn.

Interview With Applicant

2. Applicant's clarification to further distinguish the claimed invention during interview held on 4/16/2008 is acknowledged and duly noted by Examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1,2,4-8,10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirakawa (JP 05030701) in view of Fischer et al (US 5959381).

3. As per independent claim 1:

An electric machine, in particular for driving functional elements in a motor vehicle (pre-amble, patentable weight not given to intended use),

which includes a rotor shaft (Fig 4,2) that is rotatably supported in a housing part of a housing via a roller bearing (Fig 4,6),

an axial spring element (Fig 4,10) being located between the roller bearing and a rotor component (Fig 4,1) on the rotor shaft wherein the axial spring element includes an inner ring and an outer ring (Fig 4,10 far left side of spring and far right side of spring),

which are interconnected in an axially resilient manner (Figs 3 and 4), and the outer ring is connected with the rotor component (Fig 4,9) for a joint rotation relative to the housing part (Fig 4,9 and 10).

Hirakawa teaches the use of a spring being attached to a housing and rotor of a motor. Hirakawa does not teach the use of a spring having a particular shape or form. Fischer et al teaches a spring for a motor having both inner and outer rings interconnected in an axially resilient manner (Figs 4 and 5). It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Hirakawa to use a different spring having an outer ring as Fischer et al teaches (Figs 4 and 5). The motivation to do so would be that it would enhance the structural integrity of the spring disclosed by Hirakawa by connecting the outer spring segments (Fig 3,elements 15c) to form a continuous outer ring. The motivation would also be that a dual rate spring would provide different support forces for maintaining the motor parts in

their place, while simultaneously providing accommodating forces (Col 2 ll 1-5 of Fischer et al).

Prior art teaches the use of a spring to absorb thrust and for reducing vibrations in the motor, whether the spring is shaped with continuous outer ring or non continuous outer "ring elements" is a matter of obvious engineering design choice based on the configuration of the motor's size/shape as well as the location of the rotor with respect to the shaft and housing. The motivation would be based on the parameters of space availability, location of the rotor with respect to the stator, shaft, housing. A change in shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).*

4. As per dependent claim 2:

The electric machine as recited in Claim 1, wherein

the inner ring and the outer ring of the spring element are interconnected via resilient segments (Figs 4 and 5 of Fischer et al).

5. As per dependent claim 4:

The electric machine as recited in Claim 1, wherein the resilient segments are located in a spiral formation (Figs 4 and 5 of Fischer et al) around the rotor shaft and the inner ring is rotatable relative to outer ring (Fig 4 of Hirakawa), particularly when an axial load is placed on the spring element (abstract and Figs 4 and 5 of Fischer et al).

6. As per dependent claim 5:

The electric machine as recited in Claim 1, wherein the inner ring has a larger inner diameter than the outer diameter of the rotor shaft (it is inherent that the inner ring would have to have a larger diameter than the shaft in order to fit around the shaft), and the inner ring does not bear against the rotor shaft (Figs 1 and 2 of Fischer et al shows that the inner ring (element 58) does not bear against the rotor shaft).

7. As per dependent claim 6:

The electric machine as recited in Claim 1, wherein the outer ring includes a radial, circumferential outer wall (figs 3-5 of Fischer et al) that forms a press connection with a cylindrical recess in the rotor component (Fig 4,9 of Hirakawa).

8. As per dependent claim 7:

The electric machine as recited in Claim 1, wherein the outer ring is fixed in position axially on the rotor component using a detent connection, a rear section, a bayonet connection, or a material deformation (Fig 3,8 and Fig 4,9 of Hirakawa shows the spring to be attached to the rotor and axially secured).

9. As per dependent claim 8:

The electric machine as recited in Claim 1, wherein the rotor component is designed as an armature lamination core (Fig 2,1 of Hirakawa), and the housing part is designed as a pole pot (Fig 1 of Hirakawa).

10. As per dependent claim 10:

An axial spring element, in particular as recited in Claim 1, wherein the axial spring element includes an inner ring (Fig 4,58 of Fischer et al) and a concentric outer ring having a larger diameter (Fig 4,54 of Fischer et al), inner ring and concentric outer ring being interconnected in an axially resilient manner via elastic segments located in a spiral formation (Fig 4,156c and Fig 3 of Fischer et al), and the outer ring includes a reinforcement for fixing the outer ring in position axially on a rotor component (Fig 4,9 of Hirakawa).

11. As per independent claim 12:

An electric machine for driving functional elements in a motor vehicle (pre-amble, patentable weight not given to intended use),

which includes a rotor shaft that is rotatably supported in a housing part of a housing via a roller bearing (Fig 2,5), an axial spring element being located between the roller bearing and a rotor component on the rotor shaft (Fig 2,15), where in the axial spring element includes an inner ring and an outer ring, which are interconnected in an axially resilient manner, and the outer ring is connected with the rotor component for a joint rotation relative to the housing part, wherein the rotor component is designed as an armature lamination core (Fig 2,12 shows that the rotor is laminated), and the housing part is designed as a pole pot (Fig 1), and wherein the outer ring is attached directly to

an end face of the armature lamination core (Fig 4,9), wherein said armature lamination core has multiple lamella layers (Fig 2,12).

Hirakawa teaches the use of a spring being attached to a rotor of a motor rotates with the rotor. Hirakawa does not teach the use of a spring having a particular shape or form. Fischer et al teaches a spring for a motor having both inner and outer rings interconnected in an axially resilient manner (Figs 3-5). Fischer et al do not teach the use of both floating and fixed bearings. The use of springs is very well known in the motor art and particularly, the use of parts having different shapes and forms. It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Hirakawa to use a spring having a different shape or form as taught by Fischer et al. The motivation to do so would be that it would further provide different support forces for maintaining the chosen parts in place, while simultaneously providing thrust compensating or accommodating forces (Col 2 ll 1-5 of Fischer et al).

Prior art teaches the use of a spring to absorb thrust and for reducing vibrations in the motor, whether the spring is shaped with continuous outer ring or non continuous outer "ring elements" is a matter of obvious engineering design choice based on the configuration of the motor's size/shape as well as the location of the rotor with respect to the shaft and housing. The motivation would be based on the parameters of space availability, location of the rotor with respect to the stator, shaft, housing, cost and the overall design criteria or objectives for the motor to achieve. A change in shape is

generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).*

Claims 3,9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirakawa (JP 05030701) and Fischer et al (US 5959381) in view of Tsukamoto et al (JP 2000-308305).

12. As per dependent claim 9:

The electric machine as recited in Claim 1, wherein the roller bearing is designed as a floating bearing located on the end of the rotor shaft, and the rotor shaft is also supported in the housing via at least one fixed bearing.

Hirakawa teaches the use of a spring being attached to a housing and rotor of a motor. Hirakawa does not teach the use of a spring having a particular shape or form. Fischer et al teaches a spring for a motor having both inner and outer rings interconnected in an axially resilient manner. Fischer et al do not teach the use of both floating and fixed bearings. Tsukamoto et al teaches the use of both floating (Fig 1,5) and fixed bearings (Fig 1,7). It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Hirakawa and Fischer et al to use a floating and fixed bearing as taught by Tsukamoto et al. The motivation to do so would be that it would further suppress the vibrations of the motor (paragraph [0001] of Tsukamoto et al).

13. As per dependent claim 3:

The electric machine as recited in, Claim 1, wherein

the roller bearing includes an inner part, which accommodates the rotor shaft, and

an outer part supported in the housing part (Fig 1,50 of Fischer et al);

the inner ring of the spring element bears axially against inner part and, in particular, not against the outer part of the roller bearing (Fig 2,15a of Tsukamoto et al).

14. As per dependent claim 11:

The electric machine as defined in Claim 8, wherein the outer ring is attached directly to an end face of the armature lamination core (Fig 2,12 and 15 of Tsukamoto et al), wherein said armature lamination core has multiple lamella layers (Fig 2,12 of Tsukamoto et al).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 for details.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

17. Applicant's arguments, filed 4/30/2008, with respect to the rejection(s) of claim(s) 1-11 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hirakawa, Fischer et al and Tsukamoto et al.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naishadh N. Desai whose telephone number is (571) 270-3038. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Naishadh N Desai
Patent Examiner

/Darren Schuberg/
Supervisory Patent Examiner, Art Unit 2834